

REMARKS

Initially, in the Office Action, the Examiner provided a section entitled "Claim Clarifications - 35 USC § 101" in which the Examiner made certain assertions regarding Applicants' claims and specification (Office Action, paragraph 4). Applicants' silence with regard to these assertions should not be construed as Applicants' acquiescence in these assertions.

In the Office Action, the Examiner rejected claims 1, 3-11, 13, 15, 16, 19-24, 27, 30, and 31 under 35 U.S.C. § 103(a) as unpatentable over Dinker et al. (U.S. Patent No. 7,206,836) in view of Bobbitt et al. (U.S. Patent Application Publication No. 2003/0115218); and rejected claims 25, 26, 28, 29, 32, and 33 under 35 U.S.C. § 103(a) as unpatentable over Dinker et al. in view of Bobbitt et al. and Rao et al. (U.S. Patent No. 5,689,706).

By this Amendment, Applicants amend claims 1 and 3-11 to improve form, and add new claims 34-39. Applicants respectfully traverse the Examiner's rejections under 35 U.S.C. § 103 with regard to the claims presented herein. Claims 1, 3-11, 13, 15, 16, and 19-39 are pending.

REJECTION UNDER 35 U.S.C. § 103 BASED ON DINKER ET AL. AND BOBBITT ET AL.

In paragraph 6 of the Office Action, the Examiner rejected claims 1, 3-11, 13, 15, 16, 19-24, 27, 30, and 31 under 35 U.S.C. § 103(a) as allegedly unpatentable over Dinker et al. in view of Bobbitt et al. Applicants traverse the rejection.

Amended independent claim 1, for example, is directed to a file system that comprises a plurality of servers configured to store file data as chunks; and a master connected to the servers and configured to store namespace data that includes file identifiers for files for which the file data is stored as chunks, store mapping data that maps the file identifiers to the chunks to which

the file identifiers correspond, store an operation log that includes a record of changes to at least one of the namespace data or the mapping data, and store location data that identifies which of the servers stores which of the chunks, where the master is configured to communicate with the servers at startup of the master to identify the chunks stored by the servers, and record, in a non-persistent manner, information regarding the chunks stored by each of the servers as the location data.

Dinker et al. and Bobbitt et al., whether taken alone or in any reasonable combination, do not disclose or suggest the combination of features recited in amended claim 1. For example, Dinker et al. and Bobbitt et al. do not disclose or suggest a master that is configured to, among other things, store an operation log that includes a record of changes to at least one of namespace data, which includes file identifiers for files for which the file data is stored as chunks, or mapping data, which maps the file identifiers to the chunks to which the file identifiers correspond, as recited in claim 1.

The Examiner admitted that Dinker et al. does not disclose or suggest an operation log, but alleged that Bobbitt et al. discloses storing an operation log that includes a record of changes to at least one of namespace data or mapping data, and cited paragraphs 0048 and 0052-0054 of Bobbitt et al. for support (Office Action, pages 3-4). Applicants submit that the disclosure of Bobbitt et al. provides no support for the Examiner's allegation.

At paragraph 0048, Bobbitt et al. discloses:

Configuration information 45 includes configuration data that identifies what physical server(s) the various gtrees for a given GVV are hosted on, what physical devices the master and slave gtrees are stored on, the exports each server provides, and the roles played by the various components in a Gossamer virtual file system. Configuration information also may include schedule data (i.e., data pertaining to when migrations are to be performed or considered, when backups are to occur, when the background consistency checker may run, etc.), status files pertaining to operations in progress, such

as migration and backup operations, and log files. The configuration information may be stored on one of the servers used to store the master gtrees and/or the slave gtrees, including file server 20, or may be stored on a separate server that is not used to store file system data files that are part of a GVV.

In this section, Bobbitt et al., discloses configuration information that identifies what server hosts various gtrees, what devices store the master and slave gtrees, the exports provided by each server, the roles the various components play, schedule data, status files pertaining to operations in progress, and log files. While this section of Bobbitt et al., mentions "log files," nowhere does Bobbitt et al., disclose or remotely suggest that these log files include a record of changes to namespace data that includes file identifiers for files for which the file data is stored as chunks. Bobbitt et al., also does not disclose or remotely suggest that these log files include mapping data that maps the file identifiers to the chunks to which the file identifiers correspond. Thus, Bobbitt et al., does not disclose or suggest a master that is configured to, among other things, store an operation log that includes a record of changes to at least one of namespace data, which includes file identifiers for files for which the file data is stored as chunks, or mapping data, which maps the file identifiers to the chunks to which the file identifiers correspond, as recited in claim 1.

At paragraphs 0052-0054, Bobbitt et al., discloses a user-view tree that corresponds to a virtual directory and file hierarchy. Bobbitt et al., discloses that translations between virtual pathname and actual server-pathname are handled through a GVV master directory structure that logically divides its data into three spaces: a Gossamer namespace, a temporary migrating space, and a garbage space. Nowhere does Bobbitt et al., disclose or suggest that anything similar to an operation log that includes a record of changes to namespace data and/or mapping data. Thus, Bobbitt et al., does not disclose or suggest a master that is configured to, among other things, store an operation log that includes a record of changes to at least one of namespace data, which

includes file identifiers for files for which the file data is stored as chunks, or mapping data, which maps the file identifiers to the chunks to which the file identifiers correspond, as recited in claim 1.

If the Examiner maintains the rejection based on Bobbitt et al., Applicants request that the Examiner specifically point out what element(s) in Bobbitt et al. allegedly corresponds to an operation log that includes a record of changes to at least one of namespace data, which includes file identifiers for files for which the file data is stored as chunks, or mapping data, which maps the file identifiers to the chunks to which the file identifiers correspond, as recited in claim 1. As explained above, the log files disclosed by Bobbitt et al. cannot reasonably be equated to the operation log recited in claim 1.

Dinker et al. and Bobbitt et al., whether taken alone or in any reasonable combination, also do not disclose or suggest a master that is configured to, among other things, communicate with the servers at startup of the master to identify the chunks stored by the servers and record, in a non-persistent manner, information regarding the chunks stored by each of the servers as the location data, as further recited in claim 1.

The Examiner alleged that Dinker et al. discloses these features and cited column 6, lines 8-67, of Dinker et al. for support (Office Action, page 3). Applicants submit that the disclosure of Dinker et al. provides no support for the Examiner's allegation.

At column 6, lines 8-67, Dinker et al. discloses a replication topology manager that maintains the distribution of data on the nodes, as defined by a replication topology. Dinker et al. discloses that the replication topology manager can initiate one or more copy operations by the nodes so that the replication of data within the cluster conforms to the replication topology.

Even assuming, for the sake of argument, that the nodes disclosed by Dinker et al. correspond to servers and that the replication topology manager corresponds to a master (points that Applicants do not concede), nowhere in this section, or elsewhere, does Dinker et al. disclose or suggest that the replication topology manager communicates with the nodes at startup to identify the data stored by the nodes. In fact, Dinker et al. does not disclose that the replication topology manager performs any communication with the nodes to identify the data stored by the nodes, whether at startup or at another time. Thus, Dinker et al. does not disclose or suggest a master that is configured to, among other things, communicate with the servers at startup of the master to identify the chunks stored by the servers and record, in a non-persistent manner, information regarding the chunks stored by each of the servers as the location data, as recited in claim 1.

Further, nowhere in the above-identified section, or elsewhere, does Dinker et al. disclose or suggest that the replication topology manager records, in a non-persistent manner, information regarding data stored by each of the nodes. Thus, Dinker et al. does not disclose or suggest a master that is configured to, among other things, communicate with the servers at startup of the master to identify the chunks stored by the servers and record, in a non-persistent manner, information regarding the chunks stored by each of the servers as the location data, as recited in claim 1.

The Examiner alleged that "[s]toring a log in a non-persistent manner can be defined to one of ordinary skill in the art as not keeping previous versions of the information" (Office Action, page 14). The Examiner also alleged that Dinker et al. updates original records of the status of the nodes and, therefore, stores the records of the status of the nodes in a non-persistent manner (Office Action, page 14). Applicants submit that the Examiner's allegations lack merit.

Nowhere does Dinker et al. disclose that the "original records of the status of the nodes" are not maintained, as the Examiner alleged. If the Examiner disagrees, Applicants invite the Examiner to identify the specific disclosure in Dinker et al. that supports the Examiner's allegations.

The disclosure of Bobbitt et al. does not cure the deficiencies in the disclosure of Dinker et al. For example, Bobbitt et al. does not disclose or suggest a master that is configured to, among other things, communicate with the servers at startup of the master to identify the chunks stored by the servers and record, in a non-persistent manner, information regarding the chunks stored by each of the servers as the location data, as recited in claim 1. Bobbitt et al. appears to actually teach away from these features by disclosing the persistence of files when the computer turns on and off (paragraph 0027).

For at least these reasons, Applicants submit that claim 1 is patentable over Dinker et al. and Bobbitt et al., whether taken alone or in any reasonable combination. Claims 3-11 and 19-24 depend from claim 1 and are, therefore, patentable over Dinker et al. and Bobbitt et al. for at least the reasons given with regard to claim 1. Claims 3-11 and 19-24 are also patentable for reasons of their own.

For example, claim 11 recites information that includes version numbers of the chunks. Dinker et al. and Bobbitt et al. do not disclose or suggest this feature.

The Examiner alleged that Dinker et al. discloses this feature and cited column 6, lines 8-67, of Dinker et al. for support (Office Action, page 6). Applicants submit that the disclosure of Dinker et al. provides no support for the Examiner's allegation.

At column 6, lines 8-67, Dinker et al. discloses a replication topology manager that maintains the distribution of data on the nodes, as defined by a replication topology. Dinker et

al. discloses that the replication topology manager can initiate one or more copy operations by the nodes so that the replication of data within the cluster conforms to the replication topology. Dinker et al. does not disclose that versions of the data is maintained. Thus, Dinker et al. does not disclose or suggest information that includes version numbers of the chunks, as recited in claim 11.

For at least these additional reasons, Applicants submit that claim 11 is patentable over Dinker et al. and Bobbitt et al.

Dependent claim 22 recites that the chunk handle encodes a timestamp. Dinker et al. and Bobbitt et al. do not disclose or suggest this feature.

The Examiner alleged that Bobbitt et al. discloses this feature and cited paragraph 0054 of Bobbitt et al. for support (Office Action, page 10). Applicants submit that the disclosure of Bobbitt et al. provides no support for the Examiner's allegation.

At paragraph 0054, Bobbitt et al. discloses a globally unique identifier (GUID) assigned to a file. Nowhere does Bobbitt et al. disclose or remotely suggest that the GUID encodes a timestamp. Rather Bobbitt et al. discloses that the GUID is merely a 128-bit identifier (paragraph 0055). Thus, Bobbitt et al. does not disclose or suggest a chunk handle that encodes a timestamp, as recited in claim 22.

For at least these additional reasons, Applicants submit that claim 22 is patentable over Dinker et al. and Bobbitt et al.

Dependent claim 23 recites that the master is configured to update the location data by periodically instructing the servers to provide information regarding the chunks stored by the servers. Dinker et al. and Bobbitt et al. do not disclose or suggest this feature.

The Examiner alleged that Dinker et al. discloses this feature and cited column 6, lines 8-67, of Dinker et al. for support (Office Action, page 10). Applicants submit that the disclosure of Dinker et al. provides no support for the Examiner's allegation.

At column 6, lines 8-67, Dinker et al. discloses a replication topology manager that maintains the distribution of data on the nodes, as defined by a replication topology. Dinker et al. discloses that the replication topology manager can initiate one or more copy operations by the nodes so that the replication of data within the cluster conforms to the replication topology. Even assuming, for the sake of argument, that the nodes disclosed by Dinker et al. correspond to servers and that the replication topology manager corresponds to a master (points that Applicants do not concede), nowhere in this section, or elsewhere, does Dinker et al. disclose or suggest that the replication topology manager periodically instructs the nodes to provide information regarding the data stored by the nodes. In fact, Dinker et al. does not disclose that the replication topology manager performs any communication with the nodes to identify the data stored by the nodes. Thus, Dinker et al. does not disclose or suggest a master that is configured to update the location data by periodically instructing the servers to provide information regarding the chunks stored by the servers, as recited in claim 23.

For at least these additional reasons, Applicants submit that claim 23 is patentable over Dinker et al. and Bobbitt et al.

Dependent claim 24 recites that the operation log includes a logical timeline that defines an order for concurrent operations. Dinker et al. and Bobbitt et al. do not disclose or suggest this feature.

The Examiner alleged that Bobbitt et al. discloses this feature and cited paragraph 0048

of Bobbitt et al. for support (Office Action, page 11). Applicants submit that the disclosure of Bobbitt et al. provides no support for the Examiner's allegation.

At paragraph 0048, Bobbitt et al. discloses configuration information that identifies what server hosts various gtreces, what devices store the master and slave gtreces, the exports provided by each server, the roles the various components play, schedule data, status files pertaining to operations in progress, and log files. As explained above with regard to claim 1, while this section of Bobbitt et al. mentions "log files," nowhere does Bobbitt et al. disclose or remotely suggest that these log files include a record of changes to namespace data, which includes file identifiers for files for which the file data is stored as chunks, and/or mapping data, which maps the file identifiers to the chunks to which the file identifiers correspond. Thus, Bobbitt et al. cannot disclose or suggest an operation log includes a logical timeline that defines an order for concurrent operations, as recited in claim 24.

For at least these additional reasons, Applicants submit that claim 24 is patentable over Dinker et al. and Bobbitt et al.

Independent claims 13, 15, 16, and 30 recite features similar to, yet possibly different in scope from, features recited in claim 1. Claims 13, 15, 16, and 30 are, therefore, patentable over Dinker et al. and Bobbitt et al., whether taken alone or in any reasonable combination, for at least reasons similar to reasons given with regard to claim 1. Claim 27 depends from claim 13 and is, therefore, patentable over Dinker et al. and Bobbitt et al. for at least the reasons given with regard to claim 13. Claim 31 depends from claim 30 and is, therefore, patentable over Dinker et al. and Bobbitt et al. for at least the reasons given with regard to claim 31. Claims 27 and 31 also recite a feature similar to a feature recited in claim 24. Therefore, claims 27 and 31

are also patentable over Dinker et al. and Bobbitt et al. for at least reasons similar to the reasons given with regard to claim 24.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1, 3-11, 13, 15, 16, 19-24, 27, 30, and 31 under 35 U.S.C. § 103 based on Dinker et al. and Bobbitt et al.

*REJECTION UNDER 35 U.S.C. § 103 BASED ON
DINKER ET AL., BOBBITT ET AL., AND RAO ET AL.*

In paragraph 7 of the Office Action, the Examiner rejected claims 25, 26, 28, 29, 32, and 33 under 35 U.S.C. § 103(a) as allegedly unpatentable over Dinker et al. in view of Bobbitt et al. and Rao et al. Applicants traverse the rejection.

Claims 25 and 26 depend from claim 1, claims 28 and 29 depend from claim 13, and claims 32 and 33 depend from claim 30. Without acquiescing in the Examiner's rejection with regard to claims 25, 26, 28, 29, 32, and 33, Applicants respectfully submit that the disclosure of Rao et al. does not cure the deficiencies in the disclosures of Dinker et al. and Bobbitt et al. identified above with regard to claims 1, 13, and 30. For example, Rao et al. does not disclose or suggest an operation log that includes a record of changes to at least one of the namespace data and/or the mapping data, as recited in claims 1 and 13; or an operation log that includes a record of changes to the namespace data and the mapping data, as recited in claim 30. Rao et al. also does not disclose or suggest a master that is configured to communicate with the servers to identify the chunks stored by the servers, and record, in a non-persistent manner, information regarding the chunks stored by each of the servers as the location data, as recited in claim 1; means for communicating with the servers to identify file data stored by the servers as chunks and means for storing, in a non-persistent manner, location information that identifies ones of the

servers that store the chunks, as recited in claim 13; or communicating with the server devices to identify file data stored by the server devices as chunks and storing location information that identifies ones of the server devices that store the chunks, as recited in claim 30.

Therefore, claims 25, 26, 28, 29, 32, and 33 are patentable over Dinker et al., Bobbitt et al., and Rao et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claims 1, 13, and 30.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 25, 26, 28, 29, 32, and 33 under 35 U.S.C. § 103 based on Dinker et al., Bobbitt et al., and Rao et al.

NEW CLAIMS

New claims 34 and 35 depend from claim 15 and are, therefore, patentable over the applied references for at least the reasons given with regard to claim 15.

New claims 36 and 37 depend from claim 16 and are, therefore, patentable over the applied references for at least the reasons given with regard to claim 16.

New claim 38 depends from claim 13 and is, therefore, patentable over the applied references for at least the reasons given with regard to claim 13.

New claim 39 depends from claim 30 and is, therefore, patentable over the applied references for at least the reasons given with regard to claim 30.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully request the Examiner's reconsideration of the application and the timely allowance of pending claims 1, 3-11, 13, 15, 16, and 19-39.

As Applicants' remarks with respect to the Examiner's rejections are sufficient to overcome these rejections, Applicants' silence as to certain assertions by the Examiner in the Office Action or certain requirements that may be applicable to such rejections (e.g., whether a reference constitutes prior art, reasons for modifying a reference and/or combining references, assertions regarding dependent claims, etc.) is not a concession by Applicants that such assertions are accurate or such requirements have been met, and Applicants reserve the right to analyze and dispute these assertions/requirements in the future.

If the Examiner does not believe that all pending claims are now in condition for allowance, the Examiner is urged to contact the undersigned to expedite prosecution of this application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

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